

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Socioeconomic Assessment for PROPOSED AMENDED RULE 1144—METALWORKING FLUIDS AND DIRECT-CONTACT LUBRICANTS

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EXECUTIVE SUMMARY

A socioeconomic analysis was conducted to assess the impacts of Proposed Amended Rule (PAR) 1144—Metalworking Fluids and Direct-Contact Lubricants. A summary of the analysis and findings is presented below.

Elements of Proposed Rule	Proposed Amended Rule (PAR) 1144—Metalworking Fluids and Direct-Contact Lubricants—would establish VOC limits for direct-contact lubricants and metalworking fluids and streamline recordkeeping requirements for their users. For the manufacturers and suppliers of metalworking fluids and direct-contact lubricants, the proposed amendments designate a new VOC content testing method and labeling and recordkeeping requirements; require quantity and emissions reporting; and generally prohibit sales and use of non-compliant products unless specifically allowed. Other amendments to Rule 1144 are to enhance the clarity of the rule language.
Affected Facilities and Industries	Most provisions of PAR 1144 would result in no additional costs because compliant products are readily available. The VOC content testing requirement would affect facilities in the petroleum and coal products manufacturing [North American Industry Classification System (NAICS) Code 324], wholesale trade (NAICS 423 and 424), chemical manufacturing (NAICS 325), and waste management and remediation services (NAICS 562) sectors of the AQMD. Staff estimates that there are 17 firms in these sectors in the AQMD.
Assumptions of Analysis	Based on the inventory of affected fluids, it is assumed that manufacturers and suppliers of metalworking fluids and direct-contact lubricants will conduct between 2,000 and 10,000 tests in 2011 to ensure compliance with the revised VOC content and labeling requirements of the proposed amendments. Industry provided laboratory cost data were used to estimate the cost of each test, \$250. No additional costs are assumed for other provisions of the proposed amendments.
Compliance Costs	The one-time cost of VOC content testing is projected to be in the range of \$0.5 and \$2.5 million depending on the number of tests performed. Testing costs are incurred in petroleum and coal products manufacturing (69%), wholesale trade (29%), chemical manufacturing (1%), and waste management and remediation services (1%).
Jobs and Other Socioeconomic Impacts	Overall, there would be few job impacts of the proposed amendments on the local economy. Job impacts at the sectorial level relative to total industry employment are very

Jobs and Other Socioeconomic Impacts (continued)	<p>small. In 2011, between 8 and 38 jobs are projected to be created due to additional testing requirements, depending on the number of VOC content tests conducted. In later years, job impacts are negligible. The proposed rule amendment is expected to have very few changes in the relative costs of production and prices of goods in the local economy.</p> <p>The secondary and induced impacts (e.g., jobs) of PAR 1144 are analyzed using the Regional Economic Models, Inc. (REMI) model, which includes published historical (until 2007) and projected economic data in assessing impacts of a policy. Although the REMI model does not include the most recent economic statistics, the results of the model are still indicative of the underlying structure of the regional economy.</p>
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INTRODUCTION

Proposed Amended Rule (PAR) 1144—Metalworking Fluids and Direct-Contact Lubricants—expands the applicability of limits for the volatile organic compound (VOC) content of fluids to include direct-contact lubricants and metalworking fluids. Specifically, the proposed amendments establish VOC limits for direct-contact lubricants and metalworking fluids and streamline record-keeping requirements for their users. For the manufacturers and suppliers of metalworking fluids and direct-contact lubricants, the proposed amendments designate a new VOC content testing method and labeling requirements; require quantity and emissions reporting; and generally prohibit sales and use of non-compliant products. Other amendments to Rule 1144 are to enhance the clarity of rule language. It is expected that 0.86 ton of VOC emissions per day will be reduced when PAR1144 is fully implemented. Based on industry comments, this is expected to be realized through switching to currently available and used compliant products and blending, rather than through reformulation.

The socioeconomic assessment herein analyzes the impacts of the proposed rule on affected facilities and the entire economy in the four-county region.

LEGISLATIVE MANDATES

The socioeconomic assessments at the AQMD have evolved over time to reflect the benefits and costs of regulations. The legal mandates directly related to the assessment of the proposed rule include the AQMD Governing Board resolutions and various sections of the California Health & Safety Code (H&SC).

AQMD Governing Board Resolutions

On March 17, 1989 the AQMD Governing Board adopted a resolution that calls for preparing an economic analysis of each proposed rule for the following elements:

- Affected Industries
- Range of Control Costs
- Cost Effectiveness
- Public Health Benefits

On October 14, 1994, the Board passed a resolution which directed staff to address whether the rules or amendments brought to the Board for adoption are in the order of cost effectiveness as defined in the AQMP. The intent was to bring forth those rules that are cost effective first.

Health & Safety Code Requirements

The state legislature adopted legislation that reinforces and expands the Governing Board resolutions for socioeconomic assessments. H&SC Sections 40440.8(a) and (b), which became effective on January 1, 1991, require that a socioeconomic analysis be prepared for any proposed rule or rule amendment that *"will significantly affect air quality or emissions limitations."* Specifically, the scope of the analysis should include:

- Type of Affected Industries
- Impact on Employment and the Economy of the District

- Range of Probable Costs, Including Those to Industries
- Emission Reduction Potential
- Necessity of Adopting, Amending or Repealing the Rule in Order to Attain State and Federal Ambient Air Quality Standards
- Availability and Cost Effectiveness of Alternatives to the Rule

For necessity of rule adoption, please refer to the Staff Report for PAR 1144. Additionally, the AQMD is required to actively consider the socioeconomic impacts of regulations and make a good faith effort to minimize adverse socioeconomic impacts. H&SC Section 40728.5, which became effective on January 1, 1992, requires the AQMD to:

- Examine the type of industries affected, including small businesses; and
- Consider socioeconomic impacts in rule adoption

H&SC Section 40920.6, which became effective on January 1, 1996, requires that incremental cost effectiveness be performed for a proposed rule or amendment setting a Best Available Retrofit Control Technology (BARCT) requirement or a “feasible measure” relating to ozone, carbon monoxide (CO), oxides of sulfur (SO_x), oxides of nitrogen (NO_x), and their precursors. Incremental cost effectiveness is defined as the difference in costs divided by the difference in emission reductions between one level of control and the next more stringent control. Incremental cost effectiveness for this proposed rule is addressed in the Staff Report for PAR 1144.

AFFECTED FACILITIES

The proposed amendments will affect manufacturers, suppliers, and users of metalworking fluids and direct contact lubricants. However, only the manufacturers and suppliers of these fluids will incur additional costs due to testing. The manufacturers and suppliers belong to the petroleum and coal products manufacturing [North American Industry Classification System (NAICS) Code 324], wholesale trade (NAICS 423 and 424), chemical manufacturing (NAICS 325), and waste management and remediation services (NAICS 562) sectors that are engaged in the sales and distribution of VOC-containing fluids. Staff estimates that 40 firms would be affected by the proposed amendments. Of these, 17 firms reside in the AQMD.

Small Businesses

The AQMD defines a "small business" in Rule 102 as one which employs 10 or fewer persons and that earns less than \$500,000 in gross annual receipts. In addition to the AQMD's definition of a small business, the federal Small Business Administration (SBA), the federal Clean Air Act Amendments (CAAA) of 1990, and the California Department of Health Services (DHS) also provide definitions of a small business.

The SBA's definition of a small business uses the criteria of gross annual receipts (ranging from \$0.75 million to \$35.5 million), number of employees (ranging from 50 to 1,500), megawatt hours generated (4 million), or assets (\$175 million), depending on industry type (US SBA, 2008). The SBA definitions of small businesses vary by 6-digit NAICS code. For example, in

petroleum lubricating oil and grease manufacturing (NAICS 324191), a business with 500 or fewer employees is considered “small.”

The CAAA classifies a facility as a "small business stationary source" if it: (1) employs 100 or fewer employees, (2) does not emit more than 10 tons per year of either VOC or NOx, and (3) is a small business as defined by SBA.

Of the 17 affected facilities, 16 have reported sales and employment data and one of these facilities submitted NOx and VOC emissions data. Based on these data, no facilities meet the AQMD criterion for small business designation. Under the SBA’s definition for small business, 14 facilities meet the criteria for small business designation. No facility is classified as a small business under the CAAA definition due to insufficient emissions data or few emissions.

COMPLIANCE COST

Most provisions of PAR 1144 represent minor changes, resulting in no additional costs. Members of the regulated community have commented that compliant fluids are available at no greater cost than currently-used fluids. Independent staff research has confirmed these comments.

However, compliance with VOC limits for metalworking fluids and direct-contact lubricants would require one-time testing costs for their manufacturers and suppliers prior to 2012. The analysis herein assumes that the testing costs would be incurred in 2011. Using data on the inventory of affected fluids, staff estimates that 10,000 tests would be required if the VOC content of every affected fluid was measured independently. Rather than testing the VOC content of blended fluids independently, often the VOC content of blended fluids is calculated using data on the VOC content of the blended components. In practice, staff expects that only 10 to 20 percent of affected fluids will be tested. Using industry provided laboratory cost data, staff estimates each test will cost \$250. These estimates suggest a projected total cost range from \$0.5 to \$2.5 million for VOC content testing, as shown in Tables 1A and 1B. Testing costs are incurred in petroleum and coal products manufacturing (69%), wholesale trade (29%), chemical manufacturing (1%), and waste management and remediation services (1%).

**Table 1A (All Fluids)
Cost of VOC Content Testing**

Industry	Cost(in \$MM)
Petroleum and coal products manufacturing	\$1.73
Chemical manufacturing	\$0.73
Wholesale trade	\$0.03
Waste management and remediation services	\$0.03
Total	\$2.50

**Table 1B (20-percent of Fluids)
Cost of VOC Content Testing**

Industry	Cost(in \$MM)
Petroleum and coal products manufacturing	\$0.35
Chemical manufacturing	\$0.15
Wholesale trade	\$0.01
Waste management and remediation services	\$0.01
Total	\$0.50

Recordkeeping under PAR 1144 requires users of metalworking fluid and direct-contact lubricants to record the amount of VOC-containing fluid purchased each month. Based on

comments received from industry, retaining material purchase invoices is consistent with standard industry practice, so this requirement is assumed to generate a very small compliance cost and is not included in the analysis presented herein.

Staff anticipates that the proposed requirement of annual quantity and emissions reporting by manufacturers and suppliers of metalworking fluids and direct-contact lubricants sold in the District would generate a small compliance cost. Staff estimates that a total of 40 firms would be subject to this provision of PAR 1144. Annual quantity and emissions reporting is estimated to cost \$800 per year for each affected facility in 2012, 2013, and 2014, which is the last year for this requirement. This implies that the total cost of annual quantity and emissions reporting is \$32,000 per year for 2012, 2013, and 2014. Of the 40 affected facilities, 17 reside in the AQMD. Thus, the cost of compliance to the AQMD's local economy for annual quantity and emissions reporting is \$13,600. The impact on the four-county regional economy of bearing a compliance cost of this magnitude would be very small and this cost has not been included in the modeling analysis presented herein.

JOBS AND OTHER SOCIOECONOMIC IMPACTS

The REMI model (version 1.1.6) is used to assess the total socioeconomic impacts of a policy change. The model links the economic activities in the counties of Los Angeles, Orange, Riverside, and San Bernardino. The REMI model for each county is comprised of a five block structure that includes (1) output and demand, (2) labor and capital, (3) population and labor force, (4) wages, prices and costs, and (5) market shares. These five blocks are interrelated. Within each county, producers are made up of 165 private non-farm industries, three government sectors, and a farm sector. Trade flows are captured between sectors and borders as well as across counties and the rest of U.S. Market shares of industries are dependent upon their product prices, access to production inputs, and local infrastructure. The demographic/migration component has 160 ages/gender/race/ethnicity cohorts and captures population changes in births, deaths, and migration.

The assessment herein is performed relative to a baseline without the implementation of the proposed amendments. Direct effects of these amendments are estimated and used as inputs to the REMI model in order for the model to assess secondary and induced impacts for all the actors in the four-county economy on an annual basis and across a user-defined horizon (2010 to 2025). Direct effects of PAR 1144 include additional VOC content testing costs for manufacturers and suppliers of affected fluids and additional sales of VOC content testing services by local vendors at the county (or finer) level and by industry.

Overall, the proposed amendments result in very few job impacts on the local economy. Job impacts at the sectorial level relative to total industry employment are very small. One sector, professional, scientific, and technical services, is expected to experience increased employment that amounts to an annual average of one employee. Tables 2A and 2B present the estimated job impacts by industry for the range of VOC content testing anticipated by staff after the adoption of PAR 1144. Table 2A shows the regional job impact of testing every fluid affected by PAR 1144 and Table 2B shows the impact of testing 20 percent of affected fluids. Table 2A shows that if every affected fluid was tested for VOC content, approximately 21 additional jobs would be created in 2011 in the professional and technical services sector due to the increased demand

associated for VOC content tests needed. In 2011, Table 2A shows a small number of jobs would also be created in the other sectors as a result of secondary impacts in the regional economy associated with the increased spending from PAR 1144. For example, the administrative and support services sector would create three jobs, the ambulatory health care services sector would create two additional jobs and the retail trade, real estate, food services and drinking places, personal and laundry services sectors would create one job each. If every affected fluid was tested for VOC content, in 2011 a total of 38 new jobs in the AQMD are projected to result from additional spending associated with adoption of PAR 1144.

**Table 2A (Testing All Fluids)
Job Impacts by Industry**

Industry	2011	2012	2025	Average
Construction	1	0	0	0
Petroleum and coal products manufacturing	0	0	0	0
Chemical manufacturing	0	0	0	0
Wholesale trade	0	0	0	0
Retail trade	1	0	0	0
Real estate	1	0	0	0
Professional and technical services	21	0	0	1
Administrative and support services	3	0	0	0
Waste management and remediation services	0	0	0	0
Educational services	1	0	0	0
Ambulatory health care services	2	0	0	0
Food services and drinking places	1	0	0	0
Personal and laundry services	1	0	0	0
Private households	1	0	0	0
Government	0	0	0	0
Total	38	-4	-1	1

The sum of individual numbers may not be the same as the total due to rounding.

Table 2B shows that if 20 percent of affected fluid was tested for VOC content, approximately 4 additional jobs would be created in 2011 in the professional and technical services sector due to the increased demand associated for VOC content tests needed. In 2011, Table 2B shows a small number of jobs would also be created in the other sectors as a result of secondary impacts in the regional economy associated with the increased spending from PAR 1144. For example, the administrative and support services sector would create one job. If 20 percent of affected fluid was tested for VOC content, in 2011 a total of 8 new jobs in the AQMD are projected to result from additional spending associated with adoption of PAR 1144.

**Table 2B (Testing 20-percent of Fluids)
Job Impacts by Industry**

Industry	2011	2012	2025	Average
Construction	0	0	0	0
Petroleum and coal products manufacturing	0	0	0	0
Chemical manufacturing	0	0	0	0
Wholesale trade	0	0	0	0
Retail trade	1	0	0	0
Real estate	1	0	0	0
Professional and technical services	4	0	0	1
Administrative and support services	1	0	0	0
Waste management and remediation services	0	0	0	0
Educational services	0	0	0	0
Ambulatory health care services	0	0	0	0
Food services and drinking places	0	0	0	0
Personal and laundry services	0	0	0	0
Private households	0	0	0	0
Government	0	0	0	0
Total	8	-1	-1	0

The sum of individual numbers may not be the same as the total due to rounding.

The cost of VOC content tests within the anticipated range is a very small fraction of the overall cost of doing business for the affected facilities and thus has few or no impacts on the industries where the facilities belong.

Competitiveness

The additional cost brought on by the proposed rule would increase the cost of production of the affected industries relative to their national counterparts. Changes in relative production costs would thus be a good indicator of changes in relative competitiveness. The magnitude of the impact depends on the size, diversification, and infrastructure in a local economy, as well as interactions among industries. A large, diversified, and resourceful economy would absorb the impact with relative ease. Implementation of the proposed amendments increases the cost of doing business for affected industries.

The impact of the proposed rule amendment on the cost of production would be very small for all industries in the AQMD within the range of anticipated costs. An index of 0 indicates that there is no change in the cost of production relative to the rest of the United States. An index of above or below 0 means that the cost of production in the four-county areas resulting from the proposed amendments is higher or lower, respectively, than that in the rest of the U.S. If every affected fluid was tested for VOC content, all sectors, except petroleum and coal products

manufacturing, would experience an increase in the relative cost of production of less than 0.001% from 2010 to 2025. In 2011, the petroleum and coal products manufacturing sector would experience an increase in the relative cost of production of 0.01% and less than 0.001% from 2012 to 2025, respectively. If 20 percent of affected fluids undergo testing for VOC content, increases in the cost of production for all sectors will be even smaller than those cited above.

Changes in production costs will affect prices of goods produced locally. The relative delivered price of a good is based on its production cost and the transportation cost of delivering the good to where it is consumed or used. The average price of a good at the place of use reflects prices of the good produced locally and imported elsewhere.

Based on the measurement of relative delivered prices in the REMI model, the proposed amended rule is projected to result in slightly higher delivered prices. These impacts are smaller than those on the relative cost of production. If every affected fluid undergoes VOC content testing after adoption of PAR 1144, in 2011 the petroleum and coal products manufacturing sector would experience an increase in delivered price of 0.007% and less than 0.001% in the remaining years. All other sectors of the economy would experience an increase in delivered price of less than 0.001% from 2010 to 2025. If 20 percent of affected fluids undergo testing for VOC content, increases in relative delivered prices for all sectors will be even smaller than those cited above.

RULE ADOPTION RELATIVE TO THE COST EFFECTIVENESS SCHEDULE

On October 14, 1994, the Governing Board adopted a resolution that requires staff to address whether rules being proposed for adoption are considered in the order of cost-effectiveness. The 2007 Air Quality Management Plan (AQMP) ranked, in the order of cost-effectiveness, all of the proposed control measures for which costs were quantified. It is generally recommended that the most cost-effective actions be taken first.

Prior to adoption of the proposed amendments, Rule 1144 implemented control measure CTS-01—Industrial Lubricants. CTS-01 is ranked second in overall cost-effectiveness among stationary source control measures listed in the 2007 AQMP. The 2007 AQMP estimated cost-effectiveness range of CTS-01 was \$1,000 to \$5,000 per ton of VOC reduced. PAR 1144 makes adjustments to the requirements, applicability, and language of the existing rule. The estimated cost effectiveness of PAR 1144 is \$800 per ton of VOC reduced.

REFERENCES

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